

Attorney's Docket: 1997D5403/C/CP

Serial No.: 197788.251

Art. Class: 1374

Response to Office Action of March 15, 2004

**REMARKS/ARGUMENTS**

The Office Action mailed March 15, 2004 has been carefully considered together with each of the references cited therein. The amendments and remarks presented herein are believed to be fully responsive to the Office Action. Accordingly, reconsideration of the present Application in view of the following remarks is respectfully requested.

Applicant would like to thank the Examiner for Applicant's representative, Mr. Silverman, for explaining the proper interpretation of the rejections to claim 1 based on the co-additives in a telephonic discussion on 19 April 2004.

Applicant has amended the Application to more clearly describe the invention, and to place the Application in proper form for Appeal. Claim 1 was amended to remove inconsistent and conflicting language making the claim consistent with the examples for which Applicant has indicated unexpected results. In claims 3, 4 and 7, amendments were made to remove reference to formula 2(a) to be consistent with amended claim 1. Claim 1 was further amended to include a number of other additives which are typically incorporated into middle distillate fuel oil. Support for this amendment may be found in Applicant's Specification in paragraphs [0065] of the published application US20010034968 and originally filed claim 1. It is believed that no new matter has been introduced by these amendments and that no additional search is required by the office. Claim 18 was deleted. Claim 1 was rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement by containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the invention was in the position of the inventor at the time the application was filed for the recitation that the co-additive is a terpolymer of ethylene, rather than that the terpolymers are vinyl acetate containing terpolymers of ethylene. Claim 1, as amended, now properly recites this term as an optional component, therefore the rejection of claim 1 as amended under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement should be withdrawn in view of the above amendment.

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Claims 1-2 and 5-14 and 16-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Petrochemical Co. Ltd. EP 217,602 in view of admitted Prior Art and Brown et al. (WO 95/23,200). The rejection of claim 1 as amended under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Petrochemical Co. Ltd. EP 217,602 in view of admitted Prior Art and Brown et al. (WO 95/23,200) should be withdrawn for the reason that as amended, claim 1 is now recited in a closed form, removing the "co-additive" terms, and in view of applicant's previous showing of unexpected results wherein the flow improver is used in the particularly narrow class of middle distillates to which the invention is directed. The Mitsubishi reference provides a broad disclosure of an ethylene copolymer with an equally broad disclosure of comonomers and proportions of said comonomers for the improvement of the cold flow properties such as the cold filter plugging point (CFPP) and pour point (PP) of middle distillates. Patentability has frequently been held to reside in a critical condition or range embraced by the broad disclosure of the prior art. The range specified in the instant application is narrower than the '602 reference and, although the two ranges overlap to a certain extent, such circumstance does not preclude the grant of a patent when Applicant satisfactorily establishes that he obtains results which are unobvious and unexpected and that his claims do not read upon a particular embodiment of the reference. The '602 reference disclosed that the proportion of ethylene in the copolymer is 75 to 99 mol% and the proportion of the monomer is 1-25 mol%. The '602 reference is silent on the cloud point other than it states that there is a very small difference between the cloud point and the CFPP. The '602 reference further discloses and exemplifies that the class of middle distillates which benefits from these additives has a boiling range of 120 to 500°C, including those oils with a difference between the 20% distillation temperature and the 90% distillation temperature of less than 100°C.

Applicant's invention relates to an additive for use with a particular subset of middle distillates which Applicant has characterized in amended claim 1 as having a cloud point of less than -8°C, a boiling range (90-20%) of less than 120°C, a 95% distillation point of less than 350°C, and a difference between the CFPP and the PP

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of less than 10°C. The copolymer of the instant invention has from 85-97 mol% of the structure of ethylene and 3 to 15 mol% of a bivalent structure of formula (2) or formula (2a). In a previously filed Declaration under 1.132 filed by Dr. Matthias Krull, a co-inventor of the instant invention. In the declaration, Dr. Krull states that a critical aspect of the invention is that the oils have a cloud point of less than -8°C. Additional examples are provided for test oils falling outside the range of the oils in the scope of claim 1 by having cloud points greater than -8 °C, but with CFP's and distillations within the range of the middle distillates of reference '602. The results of employing copolymers both within the range of applicant's invention (A2, A4, and A5) and comparative copolymers (V1 and V2) having compositions outside applicant's composition range are shown in Table 2 of the declaration. The results clearly show that the copolymers of the instant invention when used with oils falling outside Applicant's claims properties are less effective than conventional ethylene/vinyl acetate copolymers. However, in Applicant's Specification in Table 3, on page 12, **Applicant shows the surprising benefits when copolymers A2, A4, and A5 show superior performance when used in middle distillates meeting Applicant's cloud point limitation. Nowhere in the '602 reference, which is essentially silent on the criticality of the cloud point, is it taught or suggested that the cloud point has any impact on the performance of the additive or the selection of particular combinations of middle distillate oils and additives having an ethylene copolymer with a particular proportion of ethylene in the copolymer and a particular proportion of selected monomers.** No one skilled in the art armed with the teachings of the '602 reference alone would be able to achieve the benefits of the instant invention without a considerable amount of experimentation. Such an "obvious-to-try" standard is not the standard of obviousness under 103.

The Examiner has offered WO 95/23200 to Brown as providing additional teachings which when combined with '602 render Applicant's invention obvious. Brown discloses additives for improving the cold flow properties of middle distillates, but Brown discloses and claims the use of comb polymers for this purpose. Applicant's claim 1 as amended does not include any comb polymers. Thus, there is nothing in the Brown reference which can be combined with the '602 reference to

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achieve Applicant's invention. If the Brown reference is only relied on for teaching the same mineral oils as the present invention and not for the instant flow improver, and as shown hereinabove, no combination of the Brown reference and the Mitsubishi reference will produce applicant's unexpected results. Applicant's invention is based on the solution to a problem of treating oil with low cloud points produced for Arctic conditions in order to achieve extreme low temperature properties. The Mitsubishi reference is at best silent on these particular materials. Brown attempts to solve the same problem, but Brown approaches the problem solution with comb-polymers, not the copolymers of amended claim 1. Applicant has demonstrated that the combination of the very narrow distillation middle distillate oils having a cloud point below -8C as disclosed in claim 1 and the ethylene copolymers having the narrow ranges of 85-97 mol% ethylene units and 3-15 mol% units of formula (2) or formula (2a) provide unexpected and surprising benefits over conventional additives.

The Examiner states that by the Applicant's own admission, that the oils disclosed in amended claim 1 are old and well-known. Applicant's reminds the Examiner that the invention should be considered as a whole. The instant invention is the combination of the middle distillate produced for Arctic conditions in combination with the specific copolymer of amended claim 1. Furthermore, Applicant has provided evidence of unexpected results in Table 3 of the Instant Application and by way example in the Declaration under 1.132 filed by the co-inventor. Therefore, the rejection of claim 1 under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Petrochemical Co. Ltd. EP 217,602 in view of admitted Prior Art and Brown et al. (WO 95/23,200) should be withdrawn for the reason that the percentages of the chemical components of a chemical compound fall within the general proportions of the '602 reference does not preclude patentability where the disclosure of the specification is persuasive of the criticality of the claimed proportions. If the proportions are critical to the properties of the novel product, they can render the product patentable even though the percentages of ingredients fall within the broader ranges of the prior art. Brown and the admissions of the applicant add no teaching or motivation to one skilled in the art to modify the '602 reference to

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achieve Applicant's invention. Furthermore, Brown teaches away from the instant invention by the use of comb polymers, which are not included in Applicant's claims.

The rejection of claim 2 and 5-17 under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Petrochemical Co. Ltd. EP 217,602 in view of admitted Prior Art and Brown et al. (WO 95/23,200) should be withdrawn for the reasons given in support of amended claim 1 from which they depend.

Claims 3 and 4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Petrochemical Co. Ltd. EP 217,602 in view of admitted Prior Art and Brown et al. (WO 95/23,200) as applied to claims 1-2 and 5-17 above, and further in view of Reimann et al. (Reimann) 5,254,652. The '652 reference to Reimann relates to vinyl acetate copolymers which have at least 5 wt% vinyl acetate and therefore fall outside amended claim 1 which is now recited in closed form. Thus, the '652 reference adds no further teachings to the '602 reference and the Brown reference which would not provide anyone skilled in the art with any motivation to substitute the neoalkyl radical monomer of Reimann for the ether or ester monomer of the '602 reference. Further, it is improper to employ hindsight to declare an innovation obvious. Obvious-to-try is not the same as obviousness. A matter of choice is not convincing in the absence of some reason why a person skilled in the art would find it obvious. The '652 reference provides no such motivation. The fact that the Applicant's have found a limited class of materials among the necessarily large number of prior art materials is itself a factor to consider as evidence of unobviousness of the claimed invention. There are literally hundreds of thousands of different compounds. It is from these compounds that one is left to choose. The possible combinations and permutations are inexhaustible. In the context of this art Applicant has selected each of his components. In deciding the issue of obviousness the selection of a limited class of materials from the necessarily large amount of prior art materials is an important factor. Therefore the rejection of claim 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over Mitsubishi Petrochemical Co. Ltd. EP 217,602 in view of admitted Prior Art and Brown et al. (WO 95/23,200) as applied to claims 1-2 and 5-17 above, and further in view of Reimann et al. (Reimann) 5,254,652 should be withdrawn for the reasons given in support of

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amended claim 1 and for the reason that the references contain no suggestion that the combination of the individual components of applicant's composition would produce a synergistic result.

It is respectfully submitted that, in view of the above remarks, the rejections under 35 U.S.C. §112 and §103 should be withdrawn and that this application is in a condition for an allowance of all pending claims. Accordingly, favorable reconsideration and an allowance of all pending claims are courteously solicited.

An early and favorable action is courteously solicited.

Respectfully submitted,



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